**CONCEPT:** INTEGRAL MEMBRANE PROTEINS

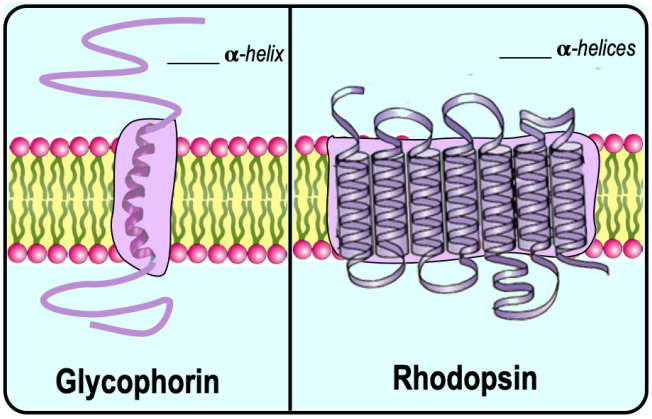
●Recall: _____-*Membrane-Proteins*: *integrated* (or membrane-embedded) proteins that are *firmly* anchored.

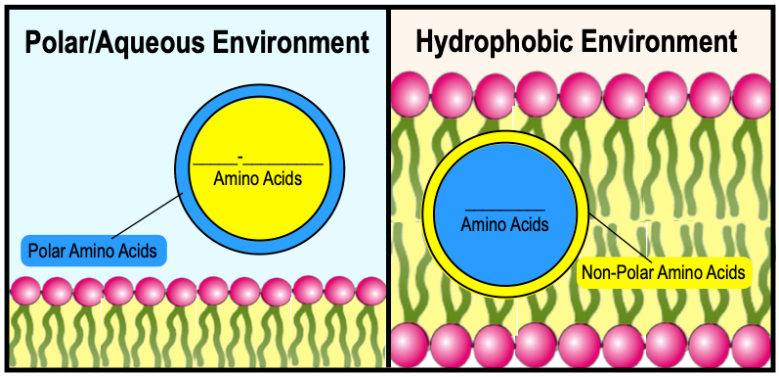
□ _____ associated via LOTS of _____ *interactions*.

□ Hydrophobic environment within membranes stabilize _____-*helix* structure.

□ Contain ≥ _____ transmembrane-spanning domains (connected by *loops* at the membrane surface).

**EXAMPLE:** Integral-Membrane-Proteins.




**PRACTICE:** Which of the amino acids of an integral membrane protein is most likely to be found contacting the membrane?

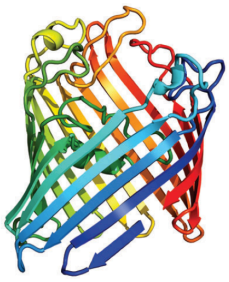
a) Gly. b) Gln. c) Glu. d) Ala. e) Asp.

**Porins & β-barrel Motifs**

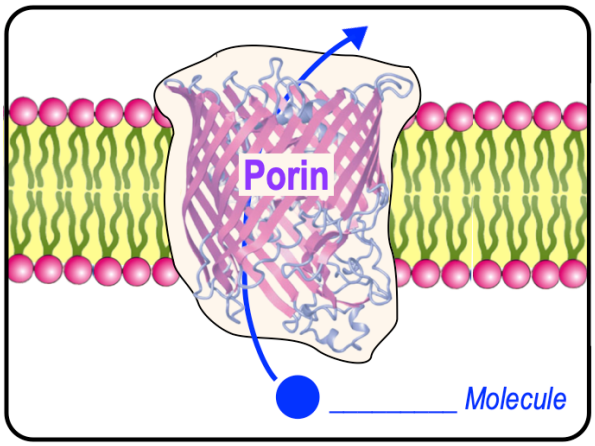
●_____: class of *integral* membrane proteins that contain a ____-*barrel* motif & function as *pores* or *channels*.

□ ____-*Barrel*: hollow cylinder of *anti-parallel β-sheets* with a *hydrophilic* _____ & *hydrophobic* _____.

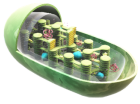
□ Allows passage of specific _____ molecules through bacterial & *mitochondrial/chloroplast* membranes.



β-Barrel




Mitochondrion



Chloroplast

**CONCEPT:** INTEGRAL MEMBRANE PROTEINS

**PRACTICE:** Which of the following statements about integral proteins is NOT correct?

a) They are firmly associated with the membrane.
b) They contain hydrophobic regions that interact with hydrophobic lipid tails.
c) They can be easily extracted/separated from lipid membranes by just a relatively small change in the pH.
d) They commonly contain α-helices or multi-stranded β-barrels.

**PRACTICE:** Integral membrane proteins are proteins that:

a) Loosely associate with the membrane.
b) Can be released from the membrane by slightly changing the pH.
c) Can be released from the membrane by slightly changing the ionic strength of the solution.
d) Penetrate or span the membrane.

**PRACTICE:** In the hydrophobic environment of a membrane, the α-helix of a protein folds such that the outer surfaces contain mostly _____ amino acids, while _____ amino acids are mostly buried on the inside.

a) Non-polar ; Hydrophobic.
b) Polar ; Hydrophilic.
c) Hydrophobic ; Non-polar.
d) Polar ; Hydrophobic.
e) Non-polar ; Hydrophilic.